cover layer comprising an ionomeric resin blend having no more than 16% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi;

an outer cover layer molded over said spherical intermediate ball to form a multi-layer golf ball, the outer layer comprising a non-ionomeric thermoplastic selected from the group consisting of polyester elastomer, polyester polyurethane and polyester amide, said outer cover layer having a modulus in a range of about 1,000 to about 30,000 psi but less than the modulus of the inner cover layer.

REMARKS

The Office Action of January 30, 1996 has been fully considered by the Applicant. As a result, the present application has been slightly amended in order to correct a typographical error which inadvertently occurred in the specification. Further, the claims were slightly amended in order to more particularly distinguish the present invention from the cited art. In view of the above amendments and the following comments, reconsideration of the application is respectfully requested.

The Office Action

The Examiner rejected claims 1-8 as being obvious and unpatentable over Nesbitt (the '193 patent of Spalding,

the present assignee's) in view of Nakamura (U.S. Patent No. 5,068,151). Specifically, the Examiner stated:

> Claims 1-8 are rejected under 35 U.S.C. §103 as being unpatentable over Nesbitt in view of Nakamura. Nesbitt discloses the claimed invention with the exception of the particulars of the materials utilized. However, one of ordinary skill in the art would, in view of Nesbitt's disclosure, recognize that other materials known int he art could have been utilized in the invention so long as the cover comprised a harder inner layer of Shore D hardness of 60 with a softer outer layer. As disclosed by Nakamura the use of hard materials such as that claimed for the inner cover layer is known in the art. It would have been obvious to one of ordinary skill in the art to have utilized such known materials in the manufacture of Nesbitt's ball absent a showing of unexpected results.
>
> Regarding claims 2 and 3, it would have been obvious to one of ordinary skill in the art to have increased the thicknesses of Nesbitt's layers to increase the durability of the ball.

However, Applicant is of the opinion that the Examiner may have oversimplified the present invention in view of the prior art and respectfully request reconsideration of this rejection.

The Present Invention

The invention of this application is directed to refined multi-layer golf ball cover compositions and the resulting multi-layer golf balls produced thereby. The novel multi-layer golf balls of the invention include a first or inner layer or ply of an improved low acid (16 weight percent acid or less) ionomer or ionomer blend. A

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second or outer layer or ply is included in the multi-layered golf balls comprised of a comparatively softer, low modulus ionomer, ionomer blend or other non-ionomeric thermoplastic elastomer such as polyurethane, a polyester elastomer or a polyesteramide.

It has been found that the use of a number of relatively recently developed low acid ionomer resins to produce an inner cover layer, provides for a substantial increase in resilience (i.e., enhanced distance), over a number of known two-piece golf balls. In addition, it has been determined that use of a blend of low acid ionomer resins to produce the inner cover layer in combination with a soft outer cover produces enhanced spin and compression characteristics.

Consequently, the overall combination of the inner and outer cover layers results in a golf ball having enhanced resilience (i.e., farther travel distance) and durability (i.e., better cut resistance, etc.) characteristics while maintaining and in many instances, improving the balls playability properties.

Although Spalding (assignee of the instant application) and others had previously attempted to produce golf balls having multi-layered covers containing one or more ionomer resins exhibiting the overall distance, playability and durability characteristics desired, such attempts have been somewhat unsuccessful in comparison with the present invention. For example, Spalding in U.S.

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Patent No. 4,431,193 (Nesbitt) disclosed a multi-layer golf ball which is produced by initially molding a first cover layer on a spherical core and then adding a second layer. The first layer is comprised of a hard, high flexural modulus resinous material such as type 1605 Surlyn® (now designated Surlyn® 8940). Type 1605 Surlyn® (Surlyn® 8940) is a sodium ion based low acid (less than or equal to 15 weight percent methacrylic acid) ionomer resin having a flexural modulus of about 51,000 psi. An outer layer of a comparatively soft, low flexural modulus resinous material such as type 1855 Surlyn® (now designated Surlyn® 9020) is molded over the inner cover layer. Type 1855 Surlyn® (Surlyn® 9020) is a zinc ion based low acid (10 weight percent methacrylic acid) ionomer resin having a flexural modulus of about 14,000 psi.

The Spalding (Nesbitt) '193 patent teaches that the hard, high flexural modulus resin which comprises the first layer provides for a gain in coefficient of restitution over the coefficient of restitution of the core. The relatively soft, low flexural modulus outer layer provides essentially no gain in the coefficient of restitution but provides for the advantageous "feel" and playing characteristics of a balata covered golf ball.

Unfortunately, however, while the balls shown in the examples of the Nesbitt '193 patent do exhibit some enhanced playability characteristics with slightly improved distance (i.e. enhanced C.O.R. values) over a number of

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other known multi-layered balls, the balls suffer from poor cut resistance and relatively short distance (i.e. lower C.O.R. values) when compared to two-piece, unitary cover layer balls. These undesirable properties make the ball produced in accordance with the specific examples of the Nesbitt '193 patent unacceptable by today's standards.

The present invention relates to a multi-layer golf ball which has a hard, low acid, inner layer and a relatively soft (contain about 50 wt % or greater soft ionomer, etc.) outer layer. As shown in Example 2 of the application, the use of the low acid (less than 16 wt % acid) inner layer gives slightly softer compression and higher spin rates than the higher acid inner layers. See, for example, Formulation Nos. 12 vs. 13, 17 vs. 16, etc. The low acid inner layer covers have a Shore D hardness of about 60 or more with the outer cover layers comprising soft ionomers or hard/soft blends having a Shore D hardness of about 64 or less with said outer layer being softer than the said inner layer. In addition, this application is directed to both standard size and oversize ball embodiments.

Furthermore, Nakamura (U.S. patent No. 5,068,151) merely relates to a two-piece golf ball having a unitary cover comprised of a lithium neutralized ionomer resin having a Shore D hardness of at least 60. Nakamura is not directed to multi-layer golf ball technology and fails to address the particular characteristics of such a ball.

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Lastly, kindly also note that an increase in cover thickness does not necessarily result in an increase in durability. Moreover, increasing the cover thickness of a multi-layered golf ball also effects such properties as weight, spin, C.O.R. (distance), compression, etc. As noted in the application, properties such as weights, etc. are strictly limited by the U.S.G.A. Thus, one can not merely increase the cover thickness to obtain enhanced durability of a regulation golf ball.

Accordingly, the Applicant respectfully submits that the present invention is not merely a combination of the teaching of Spalding's '193 patent and Nakamura. Thus, reconsideration of the rejection is respectfully requested.

CONCLUSION

In view of the above comments, it is believed that this application is in condition for allowance. Therefore, the Applicant respectfully requests favorable reconsideration and allowance of this application.

Respectfully submitted,

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